LM2500 Performance Model
Interim Project

Parameter	Variables	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		Cold Max	Ann Avg
Generator Output, kw	**23398**	23398	23398	23398	23398	23398	23398	23398	23398	23398	23398	23398	23398		24989	23398
Fuel Flow, lb/hr	**10703.2**	10703.2	10703.2	10703.2	10703.2	10703.2	10703.2	10703.2	10703.2	10703.2	10703.2	10703.2	10703.2		11077.8	10703.2
Fuel HHV, BTU/lb	**23085**	23085	23085	23085	23085	23085	23085	23085	23085	23085	23085	23085	23085		23085	23085
Fuel HHV, BTU/scf	**1050**	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050		1050	1050
Heat Input, mmBTU/hr (HHV)		247.09	247.09	247.09	247.09	247.09	247.09	247.09	247.09	247.09	247.09	247.09	247.09		255.73	247.09
Heat Rate, BTU/kw-hr (HHV)		10560	10560	10560	10560	10560	10560	10560	10560	10560	10560	10560	10560		10234	10560
Themal Efficiency (HHV)		32.3%	32.3%	32.3%	32.3%	32.3%	32.3%	32.3%	32.3%	32.3%	32.3%	32.3%	32.3%		33.4%	32.3%
Exhaust Temp, F	**950**	950	950	950	950	950	950	950	950	950	950	950	950		906	950
Wet Exhaust Flow, lb/sec	**154**	154	154	154	154	154	154	154	154	154	154	154	154		162	154
Stack Height, ft	**70**	70	70	70	70	70	70	70	70	70	70	70	70		70	70
Stack Dia, ft	**9.11**	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11		9.11	9.11
Stack Area, sq ft		65.2	65.2	65.2	65.2	65.2	65.2	65.2	65.2	65.2	65.2	65.2	65.2		65.2	65.2
Exhaust Flow, wscfs		2128	2128	2128	2128	2128	2128	2128	2128	2128	2128	2128	2128		2232	2128
Exhaust Flow, wacfs		5682	5682	5682	5682	5682	5682	5682	5682	5682	5682	5682	5682		5776	5682
Exhaust Flow, wacms		160.9	160.9	160.9	160.9	160.9	160.9	160.9	160.9	160.9	160.9	160.9	160.9		163.6	160.9
Stack Area, sq m		6.06	6.06	6.06	6.06	6.06	6.06	6.06	6.06	6.06	6.06	6.06	6.06		6.06	6.06
Exhaust Velo, m/s		26.6	26.6	26.6	26.6	26.6	26.6	26.6	26.6	26.6	26.6	26.6	26.6		27.0	26.6
Exhaust Height, m		21.3	21.3	21.3	21.3	21.3	21.3	21.3	21.3	21.3	21.3	21.3	21.3		21.3	21.3
Exhaust, dscfs @ 14.07%		1859	1859	1859	1859	1859	1859	1859	1859	1859	1859	1859	1859		1951	1859
Exhaust, mmdscfh @ 14.07%		6.69	6.69	6.69	6.69	6.69	6.69	6.69	6.69	6.69	6.69	6.69	6.69		7.02	6.69
Exhaust, mmdscfh @ 15%		7.74	7.74	7.74	7.74	7.74	7.74	7.74	7.74	7.74	7.74	7.74	7.74		8.12	7.74
Dry Fd factor, dscf/mmBTU		8847	8847	8847	8847	8847	8847	8847	8847	8847	8847	8847	8847		8967	8847
Uncontrolled Emissions																
NO_X, ppmvd @ 15%		25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0		25.0	25.0
ROC, ppmvd @15%		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		6.0	4.0
CO, ppmvd @ 15%		40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0		44.0	40.0
Controlled Emissions	**Efficiency**															
NO_X, ppmvd @ 15%	**0%**	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0		25.0	25.0
ROC, ppmvd @15%	**0%**	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		6.0	4.0
CO, ppmvd @ 15%	**0%**	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0		44.0	40.0
NH_3, ppmvd @ 15%	**0.0**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Controlled Emissions																
NO_X, lb/hr		23.11	23.11	23.11	23.11	23.11	23.11	23.11	23.11	23.11	23.11	23.11	23.11		24.25	23.11
ROC, lb/hr		1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29		2.02	1.29
CO, lb/hr		22.51	22.51	22.51	22.51	22.51	22.51	22.51	22.51	22.51	22.51	22.51	22.51		25.97	22.51
SO_2, lb/hr @ 0.0006 lb/mmbtu		0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15		0.15	0.15
PM_{10}, lb/hr @ 0.0066 lb/mmbtu		1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63		1.69	1.63
NH_3, lb/hr		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00
Controlled Emissions																
NO_X, lb/day (lb/start, stop)		554.70	554.70	554.70	554.70	554.70	554.70	554.70	554.70	554.70	554.70	554.70	554.70		581.88	554.70
ROC, lb/day (lb/start, stop)		30.87	30.87	30.87	30.87	30.87	30.87	30.87	30.87	30.87	30.87	30.87	30.87		48.57	30.87
CO, lb/day (lb/start, stop)		540.23	540.23	540.23	540.23	540.23	540.23	540.23	540.23	540.23	540.23	540.23	540.23		623.37	540.23
SO_2, lb/day (lb/start, stop)		3.56	3.56	3.56	3.56	3.56	3.56	3.56	3.56	3.56	3.56	3.56	3.56		3.68	3.56
PM_{10}, lb/day (lb/start, stop)		39.14	39.14	39.14	39.14	39.14	39.14	39.14	39.14	39.14	39.14	39.14	39.14		40.51	39.14
NH_3, lb/day (lb/start, stop)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00

Exhaust	mol wt	wet vol%	lb/lb-mol	dry vol%	lb/lb-mol
N_2 + Ar	28.16	71.71	20.19	82.06	23.11
O_2	32	12.3	3.94	**14.07**	4.50
CO_2	44	3.38	1.49	3.87	1.70
H_2O	18	12.61	2.27		0.00
Total		100.00	**27.89**	100.00	29.31

Emission Factor	Cold Max lb/mmcf	Ann Avg lb/mmcf
NO_X	99.5453	98.2168
ROC	8.3099	5.4660
CO	106.6433	95.6546
SO_2	0.6300	0.6300
PM_{10}	6.9299	6.9299
NH_3	0.0000	0.0000

Interim Project: Base Load

SIC	4911	
PROCESS EQPT DESCRIPTION	LM2500 Gas Turbine	
FUEL TYPE/PROCESS INFO	Pipeline Natural Gas	
TOTAL YEARLY PROCESS RATE	264.74	mmcf
AVERAGE HOURLY PROCESS RATE	0.2353	mmcf
MAXIMUM HOURLY PROCESS RATE	0.2436	mmcf
FUEL HIGHER HEATING VALUE	1049.99	BTU/scf
ON-LINE TIME	**1125**	**hrs/yr**
AVERAGE UNIT RATING	23.40	MW
AVERAGE HEAT INPUT	247.09	mmBTU/hr
MAX UNIT RATING	24.99	MW
MAX HEAT INPUT	255.73	mmBTU/hr

EMITTENT NAME	EMITTENT CONC.	AVG EF LBS/MMCF	MAX EF LBS/MMCF	ACTUAL LBS/HR	ACTUAL LBS/DAY	ANNUAL LBS/YR	ANNUAL TONS/YR	CNT MAX LBS/HR	CNT MAX LBS/DAY
Nitrogen Oxides (as NO_2)	25.00	98.2168	99.5453	23.1126	554.7030	26001.7	13.001	24.2451	581.8834
Reactive Hydrocarbons (ROC) as CH_4	4.00	5.4660	8.3099	1.2863	30.8704	1447.1	0.724	2.0239	48.5746
Carbon Monoxide (CO)	40.00	95.6546	106.6433	22.5097	540.2325	25323.4	12.662	25.9739	623.3742
Sulfur Dioxide (SO_2)	0.12	0.6300	0.6300	0.1483	3.5580	166.8	0.083	0.1534	3.6826
Particulates (as PM_{10})	0.0015	6.9299	6.9299	1.6308	39.1384	1834.6	0.917	1.6878	40.5083
Ammonia Slip (NH_3)	0.00	0.0000	0.0000	0.0000	0.0000	0.0	0.000	0.0000	0.0000
Total HAPS (non-ammonia)	CAS NO.	3.0692	3.0692	0.7223	17.3340	812.5	0.406	0.7475	17.9407
Acetaldehyde	75070	0.0370	0.0370	0.0087	0.2090	9.8	0.005	0.0090	0.2163
Acrolein	107028	0.0090	0.0090	0.0021	0.0508	2.4	0.001	0.0022	0.0526
Benzene	71432	0.0113	0.0113	0.0027	0.0638	3.0	0.001	0.0028	0.0661
Ethyl Benzene	100414	0.0132	0.0132	0.0031	0.0746	3.5	0.002	0.0032	0.0772
Formaldehyde	50000	0.0940	0.0940	0.0221	0.5309	24.9	0.012	0.0229	0.5495
Hexane	110543	1.7500	1.7500	0.4118	9.8835	463.3	0.232	0.4262	10.2295
Naphthalene	91203	0.0008	0.0008	0.0002	0.0045	0.2	0.000	0.0002	0.0047
PAHs	1151	0.0002	0.0002	0.0000	0.0011	0.1	0.000	0.0000	0.0012
Propylene	115071	1.0522	1.0522	0.2476	5.9426	278.6	0.139	0.2563	6.1505
Toluene	108883	0.0726	0.0726	0.0171	0.4100	19.2	0.010	0.0177	0.4244
Xylenes	1210	0.0289	0.0289	0.0068	0.1632	7.7	0.004	0.0070	0.1689

Interim Project: Composite Emissions

SIC	4911	
PROCESS EQPT DESCRIPTION	LM2500 Gas Turbine	
FUEL TYPE/PROCESS INFO	Pipeline Natural Gas	
TOTAL YEARLY PROCESS RATE	264.74	mmcf
AVERAGE HOURLY PROCESS RATE	0.2353	mmcf
MAXIMUM HOURLY PROCESS RATE	0.2436	mmcf
FUEL HIGHER HEATING VALUE	1049.99	BTU/scf
ON-LINE TIME	1125	hrs/yr
AVERAGE UNIT RATING	23.40	MW
AVERAGE HEAT INPUT	247.09	mmBTU/hr
MAX UNIT RATING	24.99	MW
MAX HEAT INPUT	255.73	mmBTU/hr
AVERAGE STACK TEMP	950	Deg F
AVERAGE STACK TEMP	783	Deg K
AVERAGE STACK FLOW	340927	wacf/min
STACK HYDRAULIC DIAMETER	9.11	ft
STACK HYDRAULIC DIAMETER	2.78	m
STACK HYDRAULIC AREA	65.18	sq ft
AVG STACK VELOCITY	5230.40	ft/min
AVG STACK VELOCITY	26.57	m/sec
STACK HEIGHT AGL	70.00	ft
STACK HEIGHT AGL	21.34	m

Annual Fuel Usage	**264.74**	**mmcf**
Annual Heat Input, HHV	**277,972**	**mmBTU**
Annual Energy Conversion, HHV	**89,840**	**mmBTU**
Annual Waste Heat, HHV	**188,132**	**mmBTU**
Annual Energy Production	**26,323**	**MW-hrs**
Average Heat Rate, HHV	**10,560**	**BTU/kw-hr**
Average Thermal Efficiency, HHV	**32.32%**	

	AVERAGE		MAXIMUM
Parameter	grams/sec		grams/sec
NO_X	0.37399		3.05482
ROG	0.02081		0.25501
CO	0.36423		3.27264
SO_2	0.00240		0.01933
PM_{10}	0.02639		0.21266
NH_3	0.00000		0.00000
TOT HAPS	0.01169		0.09419
75070	0.00014		0.00114
107028	0.00003		0.00028
71432	0.00004		0.00035
100414	0.00005		0.00041
50000	0.00036		0.00288
110543	0.00666		0.05370
91203	0.00000		0.00002
1151	0.00000		0.00001
115071	0.00401		0.03229
108883	0.00028		0.00223
1210	0.00011		0.00089

Interim Project: Composite Emissions

EMITTENT NAME	CAS NO.	ANNUAL LBS/YR	ANNUAL TONS/YR	ACTUAL LBS/HR	ACTUAL LBS/DAY	AVERAGE LBS/HR	AVERAGE LBS/DAY	MAXIMUM LBS/HR	CNT MAX LBS/DAY
Nitrogen Oxides (as NO_2)		26,001.7	13.00	23.1126	554.7030	2.9682	71.2375	24.2451	581.8834
Reactive Hydrocarbons (ROC) as CH_4		1,447.1	0.72	1.2863	30.8704	0.1652	3.9645	2.0239	48.5746
Carbon Monoxide (CO)		25,323.4	12.66	22.5097	540.2325	2.8908	69.3792	25.9739	623.3742
Sulfur Dioxide (SO_2)		166.8	0.08	0.1483	3.5580	0.0190	0.4569	0.1534	3.6826
Particulates (as PM_{10})		1,834.6	0.92	1.6308	39.1384	0.2094	5.0263	1.6878	40.5083
Ammonia Slip (NH_3)		-	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total HAPS (non-ammonia)		812.5	0.41	0.7223	17.3340	0.0928	2.2261	0.7475	17.9407
Acetaldehyde	75070	9.8	0.00	0.0087	0.2090	0.0011	0.0268	0.0090	0.2163
Acrolein	107028	2.4	0.00	0.0021	0.0508	0.0003	0.0065	0.0022	0.0526
Benzene	71432	3.0	0.00	0.0027	0.0638	0.0003	0.0082	0.0028	0.0661
Ethyl Benzene	100414	3.5	0.00	0.0031	0.0746	0.0004	0.0096	0.0032	0.0772
Formaldehyde	50000	24.9	0.01	0.0221	0.5309	0.0028	0.0682	0.0229	0.5495
Hexane	110543	463.3	0.23	0.4118	9.8835	0.0529	1.2693	0.4262	10.2295
Naphthalene	91203	0.2	0.00	0.0002	0.0045	0.0000	0.0006	0.0002	0.0047
PAHs	1151	0.1	0.00	0.0000	0.0011	0.0000	0.0001	0.0000	0.0012
Propylene	115071	278.6	0.14	0.2476	5.9426	0.0318	0.7632	0.2563	6.1505
Toluene	108883	19.2	0.01	0.0171	0.4100	0.0022	0.0527	0.0177	0.4244
Xylenes	1210	7.7	0.00	0.0068	0.1632	0.0009	0.0210	0.0070	0.1689

Phase 1 - Each Unit	Control	AHU	AHC	MHU	MHC	MDU	MDC	AA	30-DAY
Emissions without Controls	Efficiency	lb/hr	lb/hr	lb/hr	lb/hr	lb/day	lb/day	lb/yr	lb/day
Nitrogen Oxides (as NO_2)	0%	2.97	2.97	24.25	24.25	581.88	581.88	26,002	554.70
Reactive Hydrocarbons (ROC) as CH_4	0%	0.17	0.17	2.02	2.02	48.57	48.57	1,447	30.87
Carbon Monoxide (CO)	0%	2.89	2.89	25.97	25.97	623.37	623.37	25,323	540.23
Sulfur Dioxide (SO_2)	0%	0.02	0.02	0.15	0.15	3.68	3.68	167	3.56
Particulates (as PM_{10})	0%	0.21	0.21	1.69	1.69	40.51	40.51	1,835	39.14

Interim Project
Multiple Unit Emissions

SIC	4911		
PROCESS EQPT DESCRIPTION	**LM2500 Gas Turbine, N =**		2
FUEL TYPE/PROCESS INFO	Pipeline Natural Gas		
TOTAL YEARLY PROCESS RATE	529.48	mmcf	
AVERAGE HOURLY PROCESS RATE	0.4706	mmcf	
MAXIMUM HOURLY PROCESS RATE	0.4871	mmcf	
FUEL HIGHER HEATING VALUE	1049.99	BTU/scf	
ON-LINE TIME	1125	hrs/yr	
AVERAGE UNIT RATING	46.80	MW	
AVERAGE HEAT INPUT	494.17	mmBTU/hr	
MAX UNIT RATING	49.98	MW	
MAX HEAT INPUT	511.47	mmBTU/hr	
AVERAGE STACK TEMP	950	Deg F	
AVERAGE STACK TEMP	783	Deg K	
AVERAGE STACK FLOW	681854	wacf/min	
STACK HYDRAULIC DIAMETER	12.88	ft	
STACK HYDRAULIC DIAMETER	3.93	m	
STACK HYDRAULIC AREA	130.36	sq ft	
AVG STACK VELOCITY	5230.40	ft/min	
AVG STACK VELOCITY	26.57	m/sec	
STACK HEIGHT AGL	70.00	ft	
STACK HEIGHT AGL	21.34	m	

Annual Fuel Usage	**529.48**	**mmcf**
Annual Heat Input, HHV	**555,944**	**mmBTU**
Annual Energy Conversion, HHV	**179,679**	**mmBTU**
Annual Waste Heat, HHV	**376,265**	**mmBTU**
Annual Energy Production	**52,646**	**MW-hrs**
Average Heat Rate, HHV	**10,560**	**BTU/kw-hr**
Average Thermal Efficiency, HHV	**32.32%**	

	AVERAGE		MAXIMUM
Parameter	grams/sec		grams/sec
NO_X	0.74798		6.10964
ROG	0.04163		0.51002
CO	0.72847		6.54529
SO_2	0.00480		0.03867
PM_{10}	0.05278		0.42533
NH_3	0.00000		0.00000
TOT HAPS	0.02337		0.18837
75070	0.00028		0.00227
107028	0.00007		0.00055
71432	0.00009		0.00069
100414	0.00010		0.00081
50000	0.00072		0.00577
110543	0.01333		0.10741
91203	0.00001		0.00005
1151	0.00000		0.00001
115071	0.00801		0.06458
108883	0.00055		0.00446
1210	0.00022		0.00177

Interim Project
Multiple Unit Emissions

EMITTENT NAME	CAS NO.	ANNUAL LBS/YR	ANNUAL TONS/YR	ACTUAL LBS/HR	ACTUAL LBS/DAY	AVERAGE LBS/HR	AVERAGE LBS/DAY	MAXIMUM LBS/HR	CNT MAX LBS/DAY
Nitrogen Oxides (as NO_2)		52,003	26.00	46.225	1109.406	5.936	142.475	48.490	1163.767
Reactive Hydrocarbons (ROC) as CH_4		2,894	1.45	2.573	61.741	0.330	7.929	4.048	97.149
Carbon Monoxide (CO)		50,647	25.32	45.019	1080.465	5.782	138.758	51.948	1246.748
Sulfur Dioxide (SO_2)		334	0.17	0.297	7.116	0.038	0.914	0.307	7.365
Particulates (as PM_{10})		3,669	1.83	3.262	78.277	0.419	10.053	3.376	81.017
Ammonia Slip (NH_3)		-	0.00	0.000	0.000	0.000	0.000	0.000	0.000
Total HAPS (non-ammonia)		1,625	0.81	1.445	34.668	0.186	4.452	1.495	35.881
Acetaldehyde	75070	20	0.01	0.017	0.418	0.002	0.054	0.018	0.433
Acrolein	107028	5	0.00	0.004	0.102	0.001	0.013	0.004	0.105
Benzene	71432	6	0.00	0.005	0.128	0.001	0.016	0.006	0.132
Ethyl Benzene	100414	7	0.00	0.006	0.149	0.001	0.019	0.006	0.154
Formaldehyde	50000	50	0.02	0.044	1.062	0.006	0.136	0.046	1.099
Hexane	110543	927	0.46	0.824	19.767	0.106	2.539	0.852	20.459
Naphthalene	91203	0	0.00	0.000	0.009	0.000	0.001	0.000	0.009
PAHs	1151	0	0.00	0.000	0.002	0.000	0.000	0.000	0.002
Propylene	115071	557	0.28	0.495	11.885	0.064	1.526	0.513	12.301
Toluene	108883	38	0.02	0.034	0.820	0.004	0.105	0.035	0.849
Xylenes	1210	15	0.01	0.014	0.326	0.002	0.042	0.014	0.338

Rule 212 and 1401 Health Risk Assessment, Tier 4 Analysis

Note 1: Emission rates from PTE/permitted calculations
Note 2: Operating schedule = 24 hrs/day
Note 3: Unit risk factors, REL, and MP values from Table 8A (Risk Assessment Procedures, August 18, 2000).
Note 4: Target Organs by TAC from Tables 10-A & 10-B (Risk Assessment Procedures).
Note 5: X/Q values obtained via ISCST3 modeling (micrograms/cubic meter).

Substance Name	Qhr (lbs/hr)	Q_{tons} (tons/yr)	X/Q (residential)	X/Q (industrial)	X/Q_{max} (HIA)	LEA (residential)	LEA (industrial)	Unit Risk Factor (U)	REL (Chronic)	REL (Acute)	MP (MICR)	MP (Chronic)	MET (Chronic)	AF (Acute)	MICR (residential)	MICR (industrial)	Chronic Index (HIC)	Acute Index (HIA)
Ammonia	0.0000	0.0000	1.88351	4.22000	21.94736	1.00	0.14		2.00E+02	3.20E+03		1.0	1.00	1.0	-	-	0.00E+00	0.00E+00
Acetaldehyde	0.0180	0.0098	1.88351	4.22000	21.94736	1.00	0.14	2.70E-06	9.00E+00		1.0	1.0	1.00		4.98E-08	1.56E-08	2.05E-03	-
Acrolein	0.0044	0.0024	1.88351	4.22000	21.94736	1.00	0.14		6.00E-02	1.90E-01		1.0	1.00	1.0	-	-	7.48E-02	5.06E-01
Benzene	0.0055	0.0030	1.88351	4.22000	21.94736	1.00	0.14	2.90E-05	6.00E+01	1.30E+03	1.0	1.0	1.00	0.83	1.63E-07	5.13E-08	9.39E-05	7.71E-05
Ethyl Benzene	0.0064	0.0035	1.88351	4.22000	21.94736	1.00	0.14		2.00E+03			1.0	1.00		-	-	3.29E-06	-
Formaldehyde	0.0458	0.0249	1.88351	4.22000	21.94736	1.00	0.14	6.00E-06	3.00E+00	9.40E+01	1.0	1.0	1.00	1.0	2.81E-07	8.82E-08	1.56E-02	1.07E-02
Hexane	0.8525	0.4633	1.88351	4.22000	21.94736	1.00	0.14		7.00E+03			1.0	1.00		-	-	1.25E-04	-
Naphthalene	0.0004	0.0002	1.88351	4.22000	21.94736	1.00	0.14		9.00E+00			1.0	1.00		-	-	4.43E-05	-
PAHs	0.0001	0.0001	1.88351	4.22000	21.94736	1.00	0.14	1.10E-03			12.7				1.39E-06	4.37E-07	-	-
Propylene	0.5125	0.2786	1.88351	4.22000	21.94736	1.00	0.14		3.00E+03			1.0	1.00		-	-	1.75E-04	-
Toluene	0.0354	0.0192	1.88351	4.22000	21.94736	1.00	0.14		3.00E+02	3.70E+04		1.0	1.00	1.0	-	-	1.21E-04	2.10E-05
Xylenes	0.0141	0.0077	1.88351	4.22000	21.94736	1.00	0.14		7.00E+02	2.20E+04		1.0	1.00	1.0	-	-	2.06E-05	1.40E-05
											Total Maximum Individual Cancer Risk (MICR) =				**1.89E-06**	**5.92E-07**	**9.31E-02**	**5.17E-01**

TOTAL CHRONIC HAZARD INDEX PER ORGAN

System	HIC
CV/BL	0.00009
CNS/PNS	0.00036
IMMUN	0.00000
ENDO	0.00000
EYE	0.09042
KIDN	0.00000
GI/LV	0.00000
REPR	0.00022
RESP	0.09292
SKIN	0.00000

TOTAL ACUTE HAZARD INDEX PER ORGAN

System	HIA
CV/BL	0.00008
CNS/PNS	0.00002
EYE	0.51714
IMMUN	0.01077
KIDN	0.00000
GI/LV	0.00000
REPR	0.00010
RESP	0.51714
SKIN	0.00000

Rule 212 and 1401 Health Risk Assessment, Tier 4 Analysis

Acute and Chronic Hazard Index Target Organs

Substance	CHRONIC	CHRONIC	CHRONIC	CHRONIC	CHRONIC	CHRONIC	CHRONIC	CHRONIC	CHRONIC	CHRONIC		ACUTE	ACUTE	ACUTE	ACUTE	ACUTE	ACUTE	ACUTE	ACUTE	ACUTE	CHRONIC
Name	CV/BL	CNS/PNS	IMMUN	ENDO	EYE	KIDN	GI/LV	REPR	RESP	SKIN		CV/BL	CNS/PNS	EYE	IMMUN	KIDN	GI/LV	REPR	RESP	SKIN	CV/BL
Ammonia									1					1					1		-
Acetaldehyde									1												-
Acrolein					1				1					1					1		-
Benzene	1	1						1	1			1			1			1			9.39E-05
Ethyl Benzene				1		1	1	1													-
Formaldehyde					1				1					1	1				1		-
Hexane		1																			-
Naphthalene									1												-
PAHs																					-
Propylene									1												-
Toluene		1						1	1				1	1				1	1		-
Xylenes		1							1					1					1		-
																					9.39E-05

: and 1401 Health Risk Assessment, Tier 4 Analysis

ıd Chronic Hazard Index Totals (Cumulative Effect)

Substance	CHRONIC	CHRONIC	CHRONIC	CHRONIC	CHRONIC	CHRONIC	CHRONIC	CHRONIC	CHRONIC		ACUTE	ACUTE	ACUTE	ACUTE	ACUTE	ACUTE	ACUTE	ACUTE	ACUTE
Name	CNS/PNS	IMMUN	ENDO	EYE	KIDN	GI/LV	REPR	RESP	SKIN		CV/BL	CNS/PNS	EYE	IMMUN	KIDN	GI/LV	REPR	RESP	SKIN
Ammonia	-	-	-	-	-	-	-	0.00E+00	-		-	-	0.00E+00	-	-	-	-	0.00E+00	-
Acetaldehyde	-	-	-	-	-	-	-	2.05E-03	-		-	-	-	-	-	-	-	-	-
Acrolein	-	-	-	7.48E-02	-	-	-	7.48E-02	-		-	-	5.06E-01	-	-	-	-	5.06E-01	-
Benzene	9.39E-05	-	-	-	-	-	9.39E-05	9.39E-05	-		7.71E-05	-	-	7.71E-05	-	-	7.71E-05	-	-
Ethyl Benzene	-	-	3.29E-06	-	3.29E-06	3.29E-06	3.29E-06	-	-		-	-	-	-	-	-	-	-	-
Formaldehyde	-	-	-	1.56E-02	-	-	-	1.56E-02	-		-	-	1.07E-02	1.07E-02	-	-	-	1.07E-02	-
Hexane	1.25E-04	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
Naphthalene	-	-	-	-	-	-	-	4.43E-05	-		-	-	-	-	-	-	-	-	-
PAHs	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
Propylene	-	-	-	-	-	-	-	1.75E-04	-		-	-	-	-	-	-	-	-	-
Toluene	1.21E-04	-	-	-	-	-	1.21E-04	1.21E-04	-		-	2.10E-05	2.10E-05	-	-	-	2.10E-05	2.10E-05	-
Xylenes	2.06E-05	-	-	-	-	-	-	2.06E-05	-		-	-	1.40E-05	-	-	-	-	1.40E-05	-
	3.60E-04	0.00E+00	3.29E-06	9.04E-02	3.29E-06	3.29E-06	2.18E-04	9.29E-02	0.00E+00		7.71E-05	2.10E-05	5.17E-01	1.08E-02	0.00E+00	0.00E+00	9.81E-05	5.17E-01	0.00E+00

Interim Project: Fuel Gas

Component Gas	Chemical Formula	Molecular Weight	HHV btu/scf	Composition mole fraction	Composition Mole Wt	HHV btu/scf	HHV btu/lb
Carbon Dioxide	CO_2	44		0.0100	0.44		
Hydrogen Sulfide	H_2S	34		4.0E-06	0.0001		
Mercaptans	CH_3SH, C_2H_5SH	55		5.0E-06	0.0003		
Other Sulfur	COS, CS_2	68		2.0E-06	0.0001		
Water	H_2O	18		0.0002	0.0036		
Nitrogen	N_2	28		0.0090	0.25		
Oxygen	O_2	32		0.0010	0.03		
Methane	CH_4	16	1010	0.9248	14.80	934.0	
Ethane	C_2H_6	30	1769	0.0350	1.05	61.9	
Propane	C_3H_8	44	2518	0.0150	0.66	37.8	
Butane	C_4H_{10}	58	3264	0.0050	0.29	16.3	
TOTAL				**1.0000**	**17.52**	**1050.0**	**23085.3**